

WHAT WE CLAIM IS

1. A die-casting apparatus for the die cast electric rotors, in vertical press, the apparatus comprising:

a first rotary table for supporting a plurality of  
5 metal injection units;

a second rotary table for supporting a plurality of  
bottom die members;

said first and second rotary tables being partially  
overlapped and arranged to allow, upon their indexed  
10 rotation, a superimposition of each bottom die member with a  
respective injection unit, and their alignment with an upper  
die member in a metal injecting station of the press;

first and second indexing means being provided to  
sequentially rotate the first and second tables to bring  
15 each bottom die member and each injection unit around a  
number of respective workstations comprising said metal  
injection station of the press;

each of said bottom die members and each of said  
injection units being movably supported from a lower  
20 disengaged position, and an upper position in which both the  
injection unit and the bottom die member are engaged and  
urged upwards against a stack of laminations of a rotor, in  
their aligned position with the metal injection station of  
the press.

2. A die casting apparatus according to claim 1, in which each injection unit comprises a sleeve and a plunger axially movable in the sleeve, the apparatus comprising:

cooling means for cooling the bottom die members;

5 disengageable gripping means for gripping a biscuit on the plunger of each injection unit; and

first and second control means selectively operable to sequentially raise the sleeve against a bottom die, and the plunger in the metal injecting station, respectively to  
10 lower the plunger and the sleeve of the injection unit causing the removal of the biscuit from the bottom die member, moving back inside the injection sleeve, and disengagement of the injection unit from said die member in said metal injection station of the casting press.

15 3. A die-casting apparatus according to claim 2 comprising a programmable electronic control unit, said control unit being programmable to actuate said first and second control means to sequentially cause the removal of the biscuit from the bottom die member and its withdrawal  
20 into the injection sleeve by a backward movement of the plunger, and the disengagement of the injection sleeve from the bottom die.

4. A die-casting apparatus according to claim 1 comprising a housing bush for the rotor, slidably supported

in respect to the upper die member; thrust means being provided and arranged for detaching the rotor from the upper die member, and fluid operated control means for the removal of the rotor from the housing bush respectively for moving  
5 the same housing bush in respect to the upper die member of the press.

5. A die-casting apparatus according to claim 4, in which said thrust means comprise a thrust member coaxially extending to the control means for removal of the rotor from  
10 the housing bush.

6. A die-casting apparatus according to claim 5, in which said thrust member is operatively connected to a single-acting cylinder.

7. A die-casting apparatus according to claim 3, in  
15 which said control means for removal the rotor comprise first and second linear actuator, and in that said control unit is programmed for sequentially operate said first and second actuator during removal of a rotor from the housing bush.

20 8. A die-casting apparatus according to claim 2, comprising a stationary gripping member for the injection sleeve and an axially movable gripping member for the plunger in a biscuit discharging station between a metal receiving station and the metal injection station, said

stationary and movable gripping member being conformed and arranged to engage and disengage each injection sleeve and relative plunger upon rotation of the supporting table for the injection units.

5           9. A die-casting apparatus according to claim 4, comprising locking devices for locking the housing bush during the injection of the molten metal into a stack of laminations of rotor, and corresponding bottom and upper die members of the press.

10           10. A die-casting apparatus according to claim 2, wherein said first control means for raising the injection units, are arranged on both sides and at the same height of the second control means for the plunger of the injection unit.

15           11. A die-casting apparatus according to claim 1, in which each bottom die member is movably supported by the rotary table for a short vertical movement in respect to the upper die member against a stop shoulder on the second rotary table of the press.

20